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USATHAMA

U.S. Army Toxic and Hazardous Materials Agency

Report of Sampling and Analysis Results

Randolph Army Housing Units
Randolph, Massachusetts

June 1990

Prepared for:

U.S. ARMY TOXIC AND
HAZARDOUS MATERIALS AGENCY
Aberdeen Proving Ground
Maryland 21010-5401

Prepared by:

WESTON
WESTON CONSULTANTS, INC.

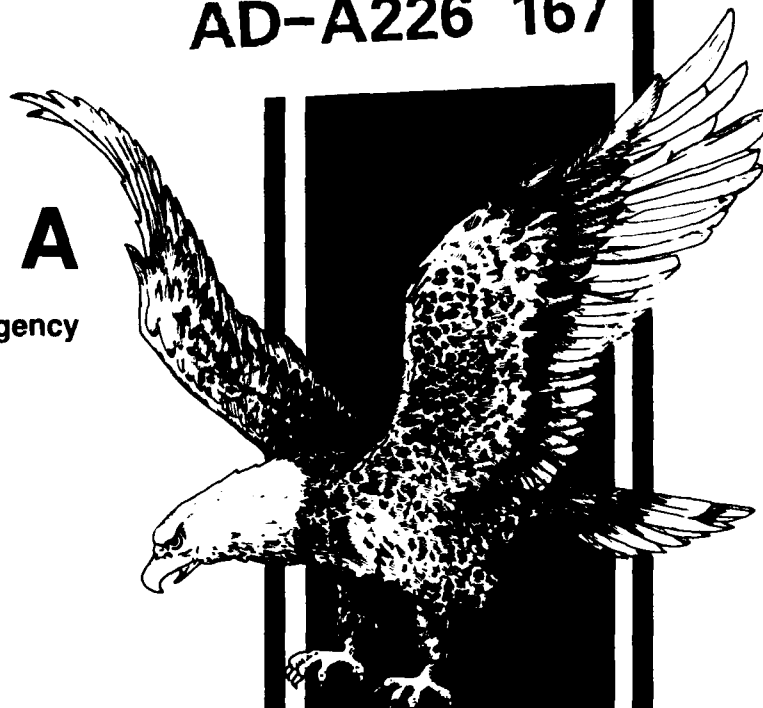
Under the supervision of:



Environmental Assessment and
Information Sciences Division
Argonne National Laboratory
Argonne, Illinois 60439

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CETHA-BC-CR-90088

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Form Approved
OMB No. 0704-0188

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**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
RANDOLPH, MASSACHUSETTS**

TABLE OF CONTENTS

		<u>Page</u>
	LIST OF APPENDICES	ii
	EXECUTIVE SUMMARY	ii
SECTION 1.	INTRODUCTION	1
	1.1 PURPOSE AND SCOPE	1
	1.2 SITE DESCRIPTION	1
	1.3 REPORT ORGANIZATION	2
SECTION 2.	ASBESTOS-CONTAINING MATERIALS	3
	2.1 SAMPLING RATIONALE	3
	2.2 FIELD ACTIVITIES AND OBSERVATIONS	3
	2.3 LABORATORY PROCEDURES AND RESULTS	4
	2.4 CONCLUSIONS AND RECOMMENDATIONS	9

LIST OF TABLES

TABLE 2.1	BULK SAMPLE SUMMARY, RANDOLPH FAMILY HOUSING	7
TABLE 2.2	ASBESTOS CONTAINING MATERIALS, RANDOLPH FAMILY HOUSING	8

LIST OF APPENDICES

APPENDIX A.	ASBESTOS SUPPORTING DATA	
	A.1 FIELD DATA	
	A.2 LABORATORY DATA	

EXECUTIVE SUMMARY

The U.S. Army family housing units (FHUs) at Randolph, Massachusetts were inspected by Roy F. Weston, Inc. (WESTON) personnel during February 1990 to further evaluate the environmental concerns identified in the enhanced Preliminary Assessment reports prepared and submitted earlier by Argonne National Laboratory (ANL) for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). Three of the 16 single-family "Capehart" housing units were examined on 05 February to investigate the possible presence of asbestos-containing materials (ACM).

The ANL Draft Sampling and Analysis Plan, Revision 1 (SAP) specified identifying and sampling the following materials, that frequently are suspected to contain asbestos, from ten per cent of the housing units or a minimum of three, whichever is greater.

- Pipe run insulation.
- Dust accumulated inside heating ductwork within the concrete slab, where present and open.
- Vinyl floor tiles.

The WESTON personnel selected three housing units for inspection after review of maintenance records and drawings, discussions with housing management personnel, and determination that the units were all unoccupied and in similar condition. The housing units chosen, Nos. 006, 009, and 016, were considered to be representative of the other 13 units, but this was not confirmed by an examination of all units.

Two samples of pipe run insulation and nine samples of vinyl floor tile were collected by WESTON from the three units and analyzed. These analyses revealed that asbestos is present in floor tile at the three housing units examined. Asbestos was quantified at 5% by polarized light microscopy (PLM) in three samples of the floor tiles. Asbestos was qualitatively identified in three other floor tile samples by Transmission Electron Microscopy (TEM). No detectable asbestos fibers were found in the two pipe run insulation samples by PLM. Dust samples were not collected because all floor vents had been permanently sealed. During the asbestos sampling activity, other suspect materials observed were roof shingles and felt.

The following practices should be observed with regard to the known and suspected asbestos-containing materials identified:

- The vinyl floor tiles pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. They should be managed in place and under an Operations and Maintenance (O&M) plan which describes procedures for the regular inspection of the floor tiles and the removal and replacement of any that become damaged.

SECTION 1. INTRODUCTION

**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
RANDOLPH, MASSACHUSETTS**

SECTION 1. INTRODUCTION

Roy F. Weston, Inc. (WESTON) was retained by Argonne National Laboratory (ANL) to provide assistance in gathering additional environmental data for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at 53 family housing unit properties (FHUs) in 12 states. The Randolph, Massachusetts property is one of these FHUs.

1.1 PURPOSE AND SCOPE

The purpose of this project was to provide the Department of the Army with sound environmental data on the property which is scheduled for sale or realignment as a result of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526). Environmental assessments of each property covered by the Act are required by the Secretary of Defense prior to their closure or realignment. Such actions must be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA) and to ensure that any environmental hazards will be identified and mitigated where required.

Previously, ANL conducted enhanced preliminary assessments (PAs) for each property. These enhanced PAs made recommendations regarding sampling and analysis to determine (1) whether and in what quantities asbestos is present in certain building construction materials (including pipe run insulation, dust accumulated in heating ductwork, vinyl floor tile, and exterior siding shingles, where present), (2) in selected contexts, whether and in what concentration soils and groundwater may be contaminated, and (3) whether and in what range transformer oils at selected sites may contain polychlorinated biphenyls (PCBs). WESTON gathered this data by implementing Argonne National Laboratory's (ANL's) Draft FHU Sampling and Analysis Plan, Revision 1 (SAP).

1.2 SITE DESCRIPTION

The Department of the Army's FHU property in Randolph, Massachusetts consists of 16 single-family units located on 6.6 acres and situated along Army Street. This FHU property is surrounded by private residential properties to the south and west, and wetlands of the Blue Hills Reservation to the north and east.

The units at this FHU property, constructed in 1958, are three-bedroom, single-family dwellings, built in the "Capehart" style. The single-story, wood-frame units were built on concrete slab foundations with no basements or crawl spaces. The ducts for the original heating system and domestic water lines were embedded in the concrete slab, which was covered with vinyl floor tile. The units have pitched roofs surfaced with asphalt shingles and exteriors finished with vinyl siding.

1.3 REPORT ORGANIZATION

This report contains the results of the sampling and analysis program performed by WESTON. Section 2 contains a description of the asbestos sampling performed at the property and laboratory results for samples of suspected asbestos-containing material (ACM) collected. Copies of field notes and laboratory results pertaining to asbestos are provided in Appendices A.1 and A.2.

SECTION 2. ASBESTOS-CONTAINING MATERIALS

SECTION 2. ASBESTOS-CONTAINING MATERIALS

WESTON personnel inspected three of the 16 "Capehart" units at the Randolph family housing facility on 05 February 1990 for the presence of suspected ACM. Pipe run insulation, and vinyl floor tiles were the only suspect materials found within the buildings that were sampled. All sampling was done following the requirements of ANL's SAP. Additionally, all field work was performed in accordance with applicable Federal regulations, including 40 CFR Part 61 subpart M, 40 CFR Part 763 subpart E, and 29 CFR Part 1910.1001.

2.1 SAMPLING RATIONALE

The sampling rationale used by WESTON for this project followed the recommendations set forth by ANL. The type of suspect ACM to be sampled, the number of housing units to be examined at each FHU facility, and number of samples to be taken for each material found were described in the SAP. The plan for Randolph required sampling of the following materials, if present:

- Pipe run insulation.
- Accumulated dust inside heating ductwork if not sealed.
- Vinyl floor tiles.

In accordance with the SAP, three units were examined at this facility. The sampling plan, however, did not identify specific units which were to be sampled. The task of determining which housing units were representative of the facility as a whole and, therefore, would be sampled was left to the WESTON field team. After reviewing all available maintenance records and drawings and discussing the facility with Directorate of Engineering and Housing (DEH) personnel, it was determined that all of the units at the Randolph FHU were similar in condition. None of the units were occupied. Units 006, 009, and 016 were chosen by the WESTON field team leader as representative units to be sampled.

The SAP specifies that a minimum of two pipe run insulation samples, four dust samples, and one sample of each color of floor tile be collected from each of the housing units examined. Nine samples of vinyl floor tile were collected at the facility. Only one of the three housing units examined was found to contain suspect pipe insulation. Therefore, only two pipe insulation samples were collected. No dust samples were collected because all floor vents had been permanently sealed.

2.2 FIELD ACTIVITIES AND OBSERVATIONS

Each of the three units was inspected to determine if suspect materials were present. The samples of the pipe run insulation were retrieved using disposable coring devices with one half-inch diameter tubes, designed such that the coring devices also serve as the sampling containers. Before the coring tool was inserted, the materials to be sampled were moistened to prevent asbestos fibers from becoming airborne. The coring devices were placed in their outer sample containers which were secured with a tight fitting lid. These containers were labeled with sample numbers, and shipped to the lab. The sampling tools were wiped clean

with a damp cloth and all debris resulting from the sampling activities was collected and placed into plastic bags. The small bore holes were sealed with an encapsulant.

Two samples of pipe run insulation were taken in Unit 016. The pipe run insulation is friable, as defined in the EPA regulations, meaning that it can be crushed, crumbled, pulverized, or otherwise reduced to a powder using hand pressure. Friable ACM are considered to be more hazardous than non-friable ACM since they are much more likely to release asbestos fibers.

Two colors (white and brown, and green) of 9" x 9" vinyl floor tile and one color (brown) of 12" x 12" vinyl floor tile were sampled in all three housing units examined. One sample was taken of each of the floor tiles found in each housing unit, resulting in a total of nine samples for laboratory determination of asbestos content. These samples were collected by breaking off a small piece of floor tile in an inconspicuous location. About one square inch of the tile surface area was taken for each sample. No effort was made to separate the mastic, which sometimes contains asbestos, from the floor tile samples themselves.

The vinyl floor tile in all three of the units inspected was in good condition. This material is considered to be a non-friable type of ACM, unless damaged. If significant damage occurs, such that the material becomes friable as defined in the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), the U.S. Environmental Protection Agency (EPA) would classify these tiles as friable materials. However, an EPA opinion was recently released that changes certain previous interpretations regarding non-friable ACM. On 23 February 1990, a memorandum was issued by the Director of Emissions Standards Division, the Director of Stationary Source Compliance Division, and the Associate Enforcement Counsel for Air Enforcement of the EPA Office of Air Quality Planning and Standards (OAQPS). This memorandum was circulated to other air quality officials and EPA regional offices in early March 1990. This latest position states that floor tiles and certain other non-friable materials do not have to be removed from a facility prior to demolition, unless they are severely damaged and thus are considered friable, or unless the demolition may cause fiber release through grinding or abrasion of the tiles. Floor tile removal shall be done if demolition is to be accomplished by burning, either of the unit or of the debris from demolition. However, if the floors in the housing units are to be renovated, special care must be taken during the process to prevent the release of asbestos fibers.

The WESTON field team was directed, as a part of the project scope contained in the SAP, to perform sampling and analysis of specific suspect ACM. Other suspect materials observed were roof shingles and felt. Copies of the field notes are included in Appendix A.1.

2.3 LABORATORY PROCEDURES AND RESULTS

The bulk samples of building materials were analyzed for asbestos content by WESTON's optical microscopy laboratory in Auburn, Alabama. This laboratory is accredited by the American Industrial Hygiene Association (AIHA) and the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The bulk samples were analyzed by Polarized Light Microscopy (PLM) using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA 600/M4-82-020, December 1982. Copies of the laboratory reports are included in Appendix A.2.

Vinyl floor tile samples for which no asbestos was found using PLM methods were analyzed qualitatively for the presence of asbestos by Transmission Electron Microscopy (TEM) at WESTON's NVLAP

accredited electron microscopy laboratory in Auburn, Alabama. Copies of these laboratory reports are also included in Appendix A.2.

All analyses were performed in accordance with protocols set forth in the Laboratory Accreditation package submitted by WESTON under NVLAP. This document includes standard procedures for sample analysis and quality assurance/quality control (QA/QC) which were acceptable to NIST. The QA/QC protocols for the laboratory differ significantly from those commonly found in chemical analysis procedures, due to the nature of the analytical procedure. Since there are no reagents, digestions, or other steps in the process that provide significant opportunities for sample contamination or analyte loss, lot blanks and sample spikes are not performed. Instead, all analyses are performed using the following steps:

- Incoming samples are divided into lots of ten for analysis.
- One sample is selected at random to serve as the QC check and divided into two containers.
- The sample lot is assigned to an analyst who determines the asbestos content of each sample.
- The QC sample is analyzed by a different analyst, designated by the sample custodian.
- The results of both analysts are submitted to the QC Coordinator for review, and comparison to the laboratory QC chart.
- The results are reviewed and approved, based on the written QC review procedures, or rejected. If rejected, the sample lot and QC sample are reanalyzed.

The WESTON laboratory routinely runs blank checks to ensure that equipment and refractive index oils are not contaminated, collects and analyzes samples of the air in the work areas to document that airborne asbestos fibers do not threaten worker health or sample contamination, and analyzes samples submitted by NIST to document precision of results as required by the NVLAP program. Samples provided in past rounds of proficiency checks are used for analyst training and to document analyst proficiency. The use of third party laboratory comparisons is often done, and is accomplished by sending duplicates of samples to an outside laboratory and comparing the results obtained by the two facilities.

In interpreting the asbestos results, it should be noted that the definition of asbestos presence differs between the EPA and some state agencies. According to the EPA definition, any materials that contain greater than one per cent (>1%) asbestos are classified as ACM by the 1977 NESHAP regulations. However, California has recently implemented state regulations that consider all materials containing 0.1 per cent (%) or more asbestos as asbestos-containing. It is believed that several other states will soon follow the lead of California in lowering the threshold limit to 0.1 per cent, including some in which properties under review in this study are located. Currently, the State of Massachusetts continues to abide by the EPA definition, hence, all samples containing >1% asbestos are considered to be ACM.

The matter is further complicated by the fact that the PLM method was developed specifically for friable materials, but not for non-friable types of suspect ACM such as vinyl floor tiles, vinyl sheeting, and siding. In fact, no specific method has been developed and promulgated to date for such samples, so laboratories use PLM as the only available documented procedure for their analysis. PLM has an inherent

limitation on fiber resolution of about 0.25 micrometer (μm) in diameter and reliable detection and quantification of fibers smaller than 1 μm in diameter is difficult. The manufacturing process for vinyl floor tiles, for example, results in the very small fiber diameters which often cannot be seen by PLM. WESTON's experience is that frequently such samples do, in fact, contain significant quantities of asbestos. WESTON has developed a qualitative technique using TEM to detect the presence of such small fibers and minimize false negatives in the laboratory results. This technique, however, does not allow a good quantitative estimate of asbestos content.

For these reasons, the WESTON laboratories have implemented a policy of reporting asbestos presence as follows:

- Asbestos determined by PLM to be present at greater than 1% is reported as the quantity detected.
- If asbestos is estimated to be less than 1% by PLM, it is reported as <1%. This estimate of asbestos content may be made when only one asbestos structure is observed.
- If asbestos is not detected in certain non-friable materials by PLM, then the samples are subjected to TEM analysis. The results are reported as positive if asbestos is detected by TEM.

Recommendations made in this report are based on the >1% regulatory limit, except for floor tiles as discussed earlier and except as otherwise noted. However, all samples in which asbestos is observed are discussed. This represents a conservative approach to the assessment of asbestos presence at the facility.

Table 2.1 contains a summary of all samples collected at the Randolph FHU, including sample locations, material descriptions, and laboratory results. PLM results are quantitative while TEM results are qualitative only. Quantity estimates for materials sampled that were suspected to contain asbestos are presented in Table 2.2. The field notes describing the observations are provided in Appendix A.1, while copies of the original laboratory reports are included as Appendix A.2.

The two samples of pipe insulation collected in Unit 016 were determined to contain no detectable quantities of asbestos by PLM. Three of the nine floor tile samples were found by PLM to contain 5% asbestos. Three of the remaining six floor tile samples, for which no asbestos was reported following PLM analysis, were found to contain asbestos fibers by the TEM procedure. While the TEM results are qualitative in nature, consideration of the process through which floor tiles were manufactured leads to the conclusion that these materials should be treated as ACM. Three samples were found to contain no detectable asbestos by both PLM and TEM. Thus, six of the nine floor tile samples were found to contain asbestos. The 13 units not inspected should be considered to have asbestos present in the floor tile unless additional sampling and analysis is performed and shows that no asbestos is present in these units.

TABLE 2.1
BULK SAMPLE SUMMARY
RANDOLPH FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	ASBESTOS CONTENT PCM ANALYSIS	CONFIRMATION TEM ANALYSIS
=====				
Unit 006				

AP429-15-MA-006-AFT	Brown 12" x 12" floor tile	Kitchen	None Detected	Negative
AP430-15-MA-006-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	Chrysotile, 5%	
AP431-15-MA-006-AFT	Green 9" x 9" floor tile	Over floor vents	None Detected	Positive
Unit 009				

AP432-15-MA-009-AFT	Brown 12" x 12" floor tile	Kitchen	None Detected	Positive
AP433-15-MA-009-AFT	Green 9" x 9" floor tile	Over floor vents	None Detected	Negative
AP434-15-MA-009-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	Chrysotile, 5%	
Unit 016				

AP435-15-MA-016-AFT	12" x 12" floor tile	Kitchen	None Detected	Negative
AP436-15-MA-016-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	Chrysotile, 5%	
AP437-15-MA-016-AFT	Green 9" x 9" floor tile	Over floor vents	None Detected	Positive
AP438-15-MA-016-API	Pipe run insulation	Heating room	None Detected	
AP439-15-MA-016-API	Pipe run insulation	Heating room	None Detected	

TABLE 2.2
ASBESTOS CONTAINING MATERIALS
RANDOLPH FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	QUANTITY	UNITS
=====				
Unit 006				

AP431-15-MA-006-AFT	Green 9" x 9" floor tile	Over floor vents	10	Square ft
AP430-15-MA-006-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	1,306	Square ft
Unit 009				

AP432-15-MA-009-AFT	Brown 12" x 12" floor tile	Kitchen	130	Square ft
AP434-15-MA-009-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	1,306	Square ft
Unit 016				

AP436-15-MA-016-AFT	White and brown 9" x 9" floor tile	All rooms except kitchen	1306	Square ft
AP437-15-MA-016-AFT	Green 9" x 9" floor tile	Over floor vents	10	Square ft

2.4 CONCLUSIONS AND RECOMMENDATIONS

The sample analyses performed by WESTON have revealed that asbestos is present in vinyl floor tiles in the three units examined. These units are thought to be representative of the other 13 at the site, but this was not confirmed by sampling all units.

The vinyl floor tiles in the three housing units inspected were in good condition, but, should they become broken or damaged, asbestos fibers may be released. The recent EPA clarification of the definition for damaged non-friable materials apparently removes some concerns about the status of these materials at the time of renovation or demolition. Inspection of these normally non-friable materials prior to demolition is required, but, if they are in good condition at the time, they may be left in place as long as planned demolition procedures will not release a significant amount of asbestos fibers. However, if demolition will subject these non-friable materials to grinding, sanding, or abrading, or if demolition involves burning of the structure or debris from the structure, all forms of ACM, including these floor tiles, must be removed in advance.

The vinyl floor coverings should be left in place and managed under an Operations and Maintenance (O&M) plan. An O&M plan must address the following:

- The locations of all known and suspected ACM.
- The procedures and frequency for periodically assessing the ACM in the facility.
- The procedures for safely handling the ACM during maintenance or removal activities.
- Designation of an asbestos coordinator for the facility.
- The responsibilities and requirements for training of personnel involved with maintenance and renovation of the facility.
- The record-keeping program for the facility.

The vinyl floor tiles should be removed during a planned renovation of the units, in accordance with the regulations applicable at the time.

Other suspect materials noted were roof shingles and felt. Care should be taken during renovations or demolition to identify suspect materials that may have been hidden from the view of the assessment team. The suspect materials observed by the field team, and any hidden suspect materials found later, should be analyzed for the presence of asbestos prior to being disturbed.

APPENDIX A.1. FIELD DATA



REPORT TO
ATTENTION

DEPARTMENT OF THE ARMY
HEADQUARTERS FORT DEVENS
FORT DEVENS, MASSACHUSETTS



01433-5100

February 22, 1990

Directorate of Engineering
and Housing

SUBJECT: Sealing of floor register openings; Off-Post
Housing

Roy F. Weston, Incorporated
1635 Pumphrey Avenue
Attention: Mr. Alex Muncie
Auburn, Alabama 36830

Dear Mr. Muncie:

Per our phone conversation of February 20, 1990, I am writing to inform you that we are aware the floor diffuser openings of the Hull, Randolph, Bedford, Nahant and Burlington, Massachusetts housing areas have been sealed with concrete.

Additionally, all of the housing areas in the Connecticut Defense area with the exception of Shelton, have had the floor diffuser openings plugged with concrete.

Sincerely,

Richard W. Green III
Chief, Design Branch
Engineering, Plans and
Services Division

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. RANDOLPH / 6 ARMY STREET.
 FACILITY CONTACT JOHN GRAFTON TELEPHONE NUMBER (508) 796-3551
 TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert Lynch
 TECHNICIAN NAME _____ SIGNATURE _____
 TIME ARRIVED 1150 TIME DEPARTED 1200 DATE 05 Feb 90
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story three bedroom house with blue aluminum siding. There are three types of floor tile present. The roof has suspect ~~roof tile~~ roofing material. There is no pipe insulation present. The floor vents have been sealed. The floor tile is throughout the entire house. The actual street address is 6 Army St. Randolph, MA.

This is a Capehart style home. It was chosen based on available drawings, maintenance records, and discussion with the housing.

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>3</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>0</u>	Exp. Assess. Form Init. <u>✓</u>
Q.A. Check _____	SIGNATURE _____
	DATE <u>1 / 90</u> dd mm yy

SITE SURVEY LOG

(Continued)

management personnel.

ASBESTOS SURVEY DATA

001

BLDG. NO.: 0016
INSTALLATION 0115

TASK TEAM MEMBERS
ROBERT LYNCH
STAN ANDERSON

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: RANDOLPH FAMILY HSG
BLDG. DESCRIPTION: CAMPBELL STYLE

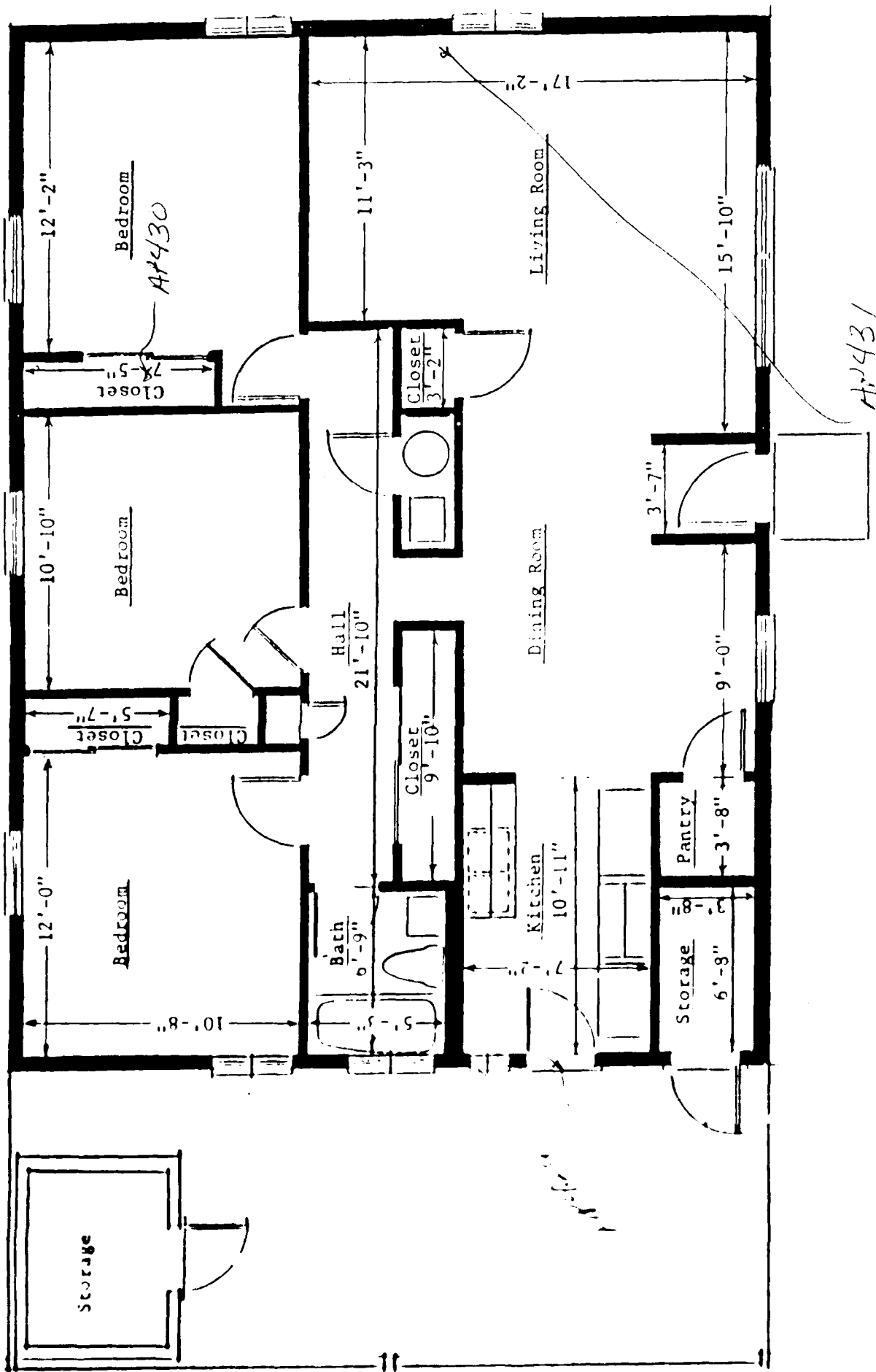
DATE (dd/mm/yy): 05/10/90
TIME ARRIVED: 1250

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	AP429-15-MA-006-AFT					KITCHEN	130		0964A	01
2.	AP430-15-MA-006-AFT					OVER VENTS	110		0964B	02
3.	AP430-15-MA-006-AFT					ALL ROOM EXCEPT KITCHEN	1306		0964C	03
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	12x12 brown floor tile in kitchen
02	9x9 green floor tile over old vents
03	9x9 white with brown floor tile in all rooms except kitchen

TECHNICIAN SIGNATURE Robert Lynch

QUALITY ASSURANCE SIGNATURE _____



FLOOR PLAN - CAPHEART TYPE

APARTMENT 430

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. RANDOLF FAMILY HSCG / 09 ARMY ST.
 FACILITY CONTACT JOAN GRIFFIN TELEPHONE NUMBER (508) 746-3551
 TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert Lynch
 TECHNICIAN NAME _____ SIGNATURE _____
 TIME ARRIVED 1330 TIME DEPARTED 1335 DATE 05 Feb 92
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story 3 bedroom building with green aluminum siding. There are three types of floor tile present. The roof has suspect felt/shingles on it. There is no pipe insulation present. The old floor vents have been covered (sealed). The actual street address is 9 Army Street, Randolph, MA.

There is one ^{and} expansion joint on the heating unit.

This is a capehart style home. It was chosen to be surveyed based on valuable drawings.

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>3</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>11</u>	Exp Assess. Form Init <u>✓</u>

A Check _____ SIGNATURE _____

DATE 05 Feb 92
 dd mm yy

SITE SURVEY LOG

(Continued)

maintenance records, and discussion
with housing management personnel

ASBESTOS SURVEY DATA

0019

BLDG. NO.: 0019
INSTALLATION 0115

TASK TEAM MEMBERS
ROBERT LYNCH
STEVE ANDERSON

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: RANDOLPH EMMERY HSC
BLDG. DESCRIPTION: CANTHART STYLE

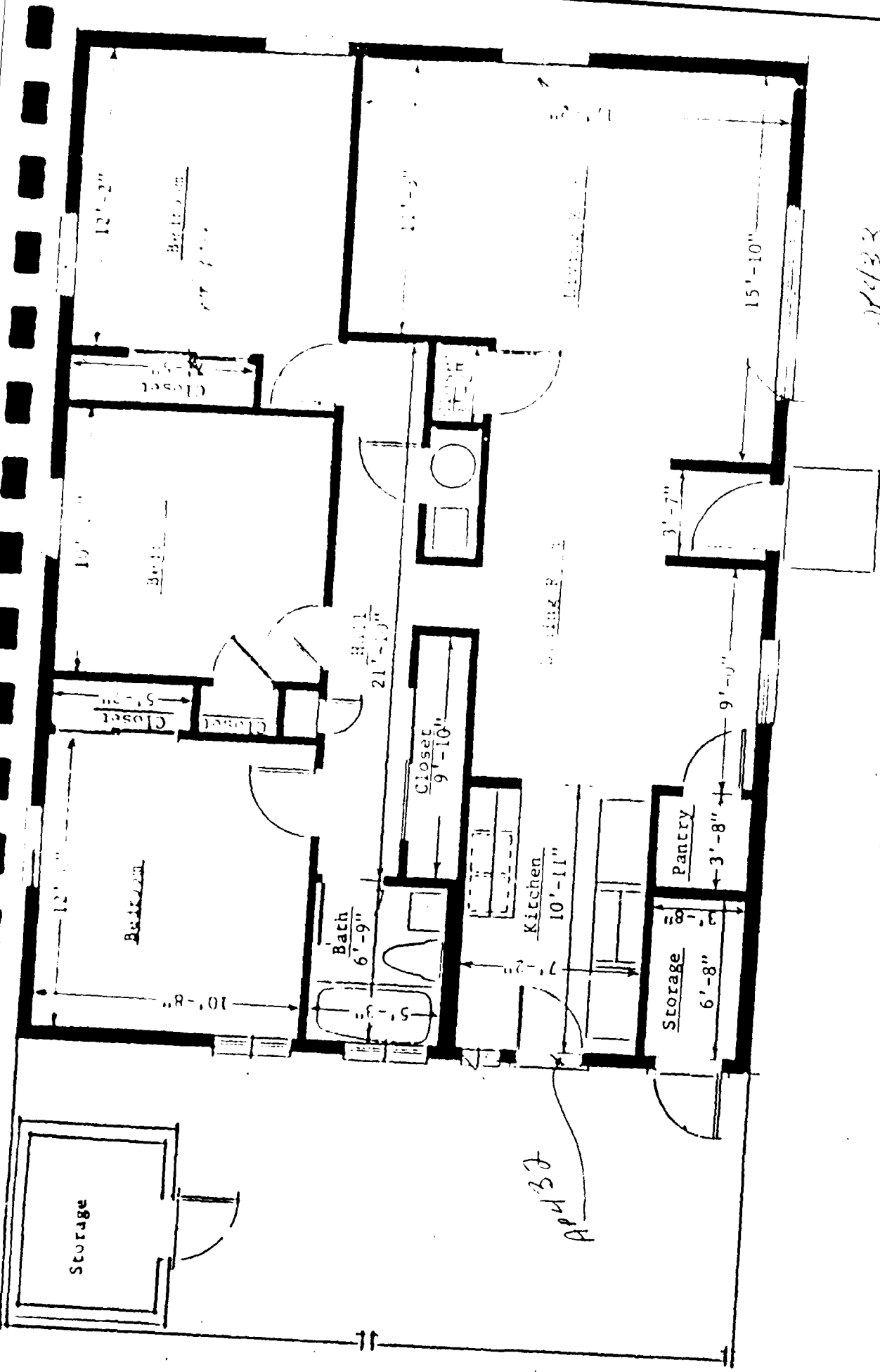
DATE (dd/mm/yy): 05/18/90
TIME ARRIVED: 1330

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	AP432-15-MN-009-AFI					KITCHEN	130			01
2.	AP433-15-MN-009-AFI					OVER VENTS	16			02
3.	AP434-15-MN-009-AFI					ALL RM EXCEPT KIT	1306			03
4.	----									
5.	----									
6.	----									
7.	----									
8.	----									
9.	----									
10.	----									
11.	----									
12.	----									

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	12x12 Brown floor tile in the kitchen.
02	9x9 Green floor tile over old floor vents.
03	9x9 white with brown floor tile in entire house except kitchen.

TECHNICIAN SIGNATURE Robert Lynch

QUALITY ASSURANCE SIGNATURE _____



- FLOOR PLAN - CAPEHART TYPE -

AP 433

9 APRIL ST. KAWILCUPH 117

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY, BLDG. NO. RANDELPH FAMILY HSG 16 army st.
 FACILITY CONTACT JOHN GRAFTON TELEPHONE NUMBER (508) 796-3551
 TECHNICIAN NAME ROBERT LYNCH SIGNATURE Robert Lynch
 TECHNICIAN NAME _____ SIGNATURE _____
 TIME ARRIVED 1345 TIME DEPARTED 1400 DATE 05 Feb 90
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

This is a one story 3 bedroom home with white aluminum siding. There are three types of floor tile present. There is suspect roofing material present (shingles and felt). There is suspect air cell-type insulation in heating room. There is also one expansion joint in this room. The old floor vents are covered with floor tile.

The actual street address is 16 Army Street Randolph, MA.

This is a capehart style home. It was chosen based upon available drawings, maintenance

ACTIVITY CHECKLIST

Interviews Completed <u>✓</u>	Number of Samples <u>5</u>
Drawings Reviewed <u>✓</u>	Survey Form Completed <u>✓</u>
Drawings Attached <u>✓</u>	Site Log Completed <u>✓</u>
Visual Inspection <u>✓</u>	Chain-of-Custody Initiated <u>✓</u>
Number of Photos <u>0</u>	Exp. Assess. Form Init. <u>✓</u>

Q.A. Check _____ SIGNATURE _____

DATE 1 / 1 / 90
dd mm yy

SITE SURVEY LOG

(Continued)

Access, and discussions with
housing management personnel

ASBESTOS SURVEY DATA

0023

BLDG. NO.: C1116
INSTALLATION C1115

TASK TEAM MEMBERS

ROBERT LYNCH
STEVE ANDERSON

W.O. No. 2104-13-01
CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: RANDOLPH FARMY HSC
BLDG. DESCRIPTION: CAPE HART

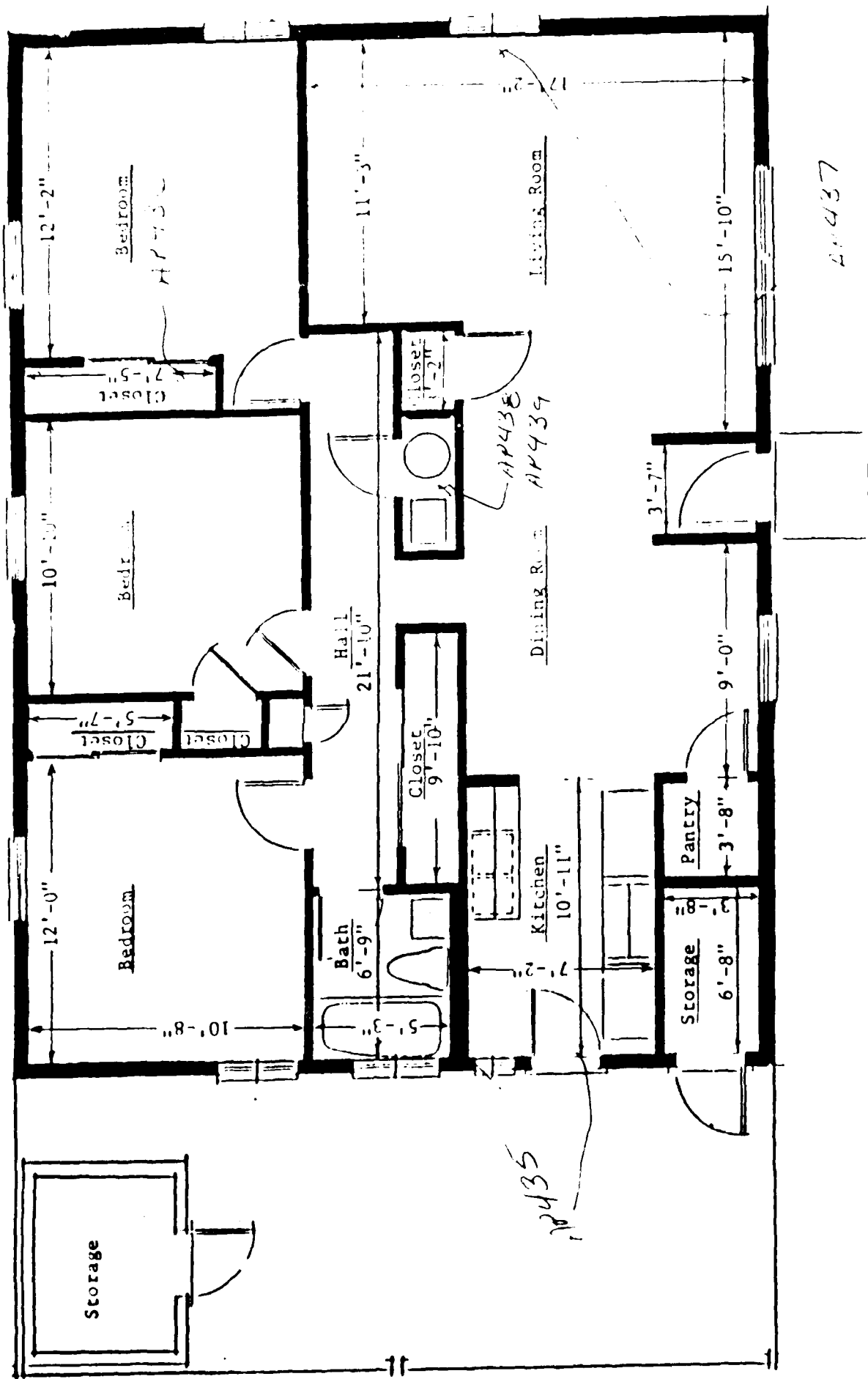
DATE (dd/mm/yy): 05/02/90
TIME ARRIVED: 1345

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	QTY	E.A. FORM NO.	NOTES
1.	AP435-15	MA	C116	AFI		KITCHEN	1/32		C966W	Q1
2.	AP436-15	MA	C116	AFI		ALLIANCE EXERCISE HALL	1/32		C966W	Q2
3.	AP437-15	MA	C116	AFI		OVERVIEW	1/32		C966W	Q3
4.	AP438-15	MA	C116	AFI		HEATING ROOM	1/32		C966W	Q4
5.	AP439-15	MA	C116	AFI		HEATING ROOM	N/A		C966W	Q4
6.					AI					
7.					AI					
8.					AI					
9.					AI					
10.					AI					
11.					AI					
12.					AI					

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	12x12 floor tile in kitchen only
02	9x9 white with brown floor tile in all rooms except kitchen
03	9x9 green floor tile over old floor vents
04	# less than 4" air cell type pipe run in heating room only.

TECHNICIAN SIGNATURE Robert Lynch

QUALITY ASSURANCE SIGNATURE _____



FLOOR PLAN - CAPEHART TYPE

16 APR 57 K. H. L. C. P. H. 11' H

APPENDIX A.2. LABORATORY DATA

BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 2104-13-01-0000

Sample Number AP429 through Sample AP439

AD LAB ID NO	CLIENT/CLIENT ID	LOCATION	MATERIAL DESCRIPTION*	DATE RECEIVED	RESULTS**					LAYERS	ANALYST
					CH	AM	CR	OT	TL		
AP429	15-MA-006-AFT	KITCHN	NF, BR, 12X12 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP430	15-MA-006-AFT	ALLRMS	NF, WH, 9X9 FT	02/09/90	5	ND	ND	ND	5	No	06071
AP431	15-MA-006-AFT	OVR VE	NF, GR, 9X9 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP432	15-MA-009-AFT	KITCHN	NF, BR, 12X12 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP433	15-MA-009-AFT	OVR VE	NF, GR, 9X9 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP434	15-MA-009-AFT	ALLRMS	NF, WH, 9X9 FT	02/09/90	5	ND	ND	ND	5	No	06071
AP435	15-MA-016-AFT	KITCHN	NF, 12X12 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP436	15-MA-016-AFT	ALLRMS	NF, WH, 9X9 FT	02/09/90	5	ND	ND	ND	5	Yes	06071
AP437	15-MA-016-AFT	OVR VE	NF, GR, 9X9 FT	02/09/90	ND	ND	ND	ND	ND	No	06071
AP438	15-MA-016-API	HEATRM	F, PIPE RUN	02/09/90	ND	ND	ND	ND	ND	Yes	06071
AP439	15-MA-016-API	HEATRM	F, PIPE RUN	02/09/90	ND	ND	ND	ND	ND	No	06071

* MATERIAL DESCRIPTION	FRIABLE ¹	COLOR ²		SYSTEM ³
Friable ¹ , Color ² , System ³ , Type	F - Friable NF - Non-Friable	BK - Black BL - Blue BR - Brown GR - Green GY - Gray	RD - Red TN - Tan WH - White YL - Yellow	CHW - Chilled Water DOM - Domestic Water HHW - Heating Hot Water STM - Steam UNK - Unknown
** RESULTS				
CH - Chrysotile	OT - Other			
AM - Amosite	TL - Total			
CR - Crocidolite				

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All analyses are performed in accordance with the methods set forth in U.S. EPA 600/M4-82-020, as amended. Weston's Optical Microscopy Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program for asbestos fiber analysis (Laboratory Code 1254).



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

Transmission Electron Microscopy
Asbestos Summary Report

Client: Argonne National Laboratories Weston W.O. No.: 2104-13-01-0000

Sample Type: Floor Tiles Sampling Location: Randolph

QUALITATIVE ANALYSIS

FLOOR TILES: A 0.5 to 2.0 gram portion of each floor tile sample was ultrasonically disaggregated in four milliliters of deionized, 0.2 μ m membrane filtered water. After the coarse fraction settled, a drop of the suspended, clay-sized fraction was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated for thermal stability in the electron beam and examined with a Philips CM12 transmission electron microscope operating at 120 kilovolts accelerating voltage.

ANALYTICAL RESULTS

<u>SAMPLE IDENTIFICATION</u>	<u>RESULTS</u>
AP429-15-MA-006-AFT	Negative
AP431-15-MA-006-AFT	Positive
AP432-15-MA-009-AFT	Positive
AP433-15-MA-009-AFT	Negative
AP435-15-MA-016-AFT	Negative
AP437-15-MA-016-AFT	Positive

Barry Rayfield
(Approved for Transmittal)

3/15/90
(Date)

* This test report relates only to the specific items tested.

** These sample results may only be reproduced in full, and are valid only if approved for transmittal.